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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,763	02/20/2004	Whonchee Lee	108298758US	7390

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EXAMINER
CHEN, KIN-CHAN

ART UNIT	PAPER NUMBER
1765	

DATE MAILED: 12/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/783,763	Applicant(s) LEE, WHONCHEE	
	Examiner Kin-Chan Chen	Art Unit 1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) 32-49 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>0322;0903;123004;0309;0609;0724;0815-05</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-31, drawn to a polishing method, classified in class 438, subclass 692.
 - II. Claims 32-49, drawn to an apparatus, classified in class 156, subclass 345.
2. The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process such as optical lens polishing.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

3. During a telephone conversation with John M. Wechkin on November 21, 2005 a provisional election was made without traverse to prosecute the invention of group I, claims 1-31. Affirmation of this election must be made by applicant in replying to this Office action. Claims 32-49 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language. (* filing after Nov. 29, 2000*)

Claim Rejections - 35 USC § 102

5. Claims 1, 2, 4-7, 11-13, 15-17, 21, 23 and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by So (US 6,893,328).

In a method for ECMP, So teaches that a microfeature workpiece may be contacted with a polishing surface of a polishing medium. the workpiece may be placed in electrical communication with a first electrode and a second electrode, at lest one of the electrodes may be spaced apart form the workpiece. A polishing liquid may be

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disposed. At least one of the workpiece and the polishing surface may be moved (rotated) relative to the other. The electrical current may be passed through and the electrodes and the workpiece to remove material from the workpiece while the workpiece contacts the polishing surface. At least a portion of the polishing liquid may be passed through at least one recess in the polishing surface so that a gap on the polishing liquid is located between the workpiece and a surface of the recess facing toward the workpiece. See Figs. 1-4A. col. 4, lines 24-30; 49-67; col. 5, lines 1-5; col. 6, lines 18-32, 45-52; col. 7, line 17, lines 53-60; col. 8, lines 53-56.

The limitations of dependent claims 15, 16, 23, and 24 have been also addressed above and rejected for the same reasons, *supra*.

As to dependent claims 2, 5, 6, and 7, see col. 8, lines 53-65.

As to dependent claims 11, 12, 13, and 21, see col. 6, lines 24-33.

As to dependent claim 4 (also for the limitation in claim 17), see Figs 2A and 3A and the description in col. 6.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. Claims 3, 8-10, 14, 18-20, 22, and 25-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over So (US 6,893,328).

In a method for ECMP, So teaches that a microfeature workpiece may be contacted with a polishing surface of a polishing medium. the workpiece may be placed in electrical communication with a first electrode and a second electrode, at least one of the electrodes may be spaced apart from the workpiece. A polishing liquid may be disposed. At least one of the workpiece and the polishing surface may be moved (rotated) relative to the other. The electrical current may be passed through and the electrodes and the workpiece to remove material from the workpiece while the workpiece contacts the polishing surface. At least a portion of the polishing liquid may be passed through at least one recess in the polishing surface so that a gap on the polishing liquid is located between the workpiece and a surface of the recess facing toward the workpiece. See Figs. 1-4A. col., 4, lines 24-30; 49-67; col. 5, lines 1-5; col. 6, lines 18-32, 45-52; col. 7, line 17, lines 53-60; col. 8, lines 53-56.

The above-cited claims differ from the prior art by specifying well-known features (such as using polishing liquid having TMAH in claims 14 and 22) to the art of semiconductor device fabrication (the examiner takes official notice) and using various processing parameters (such as claims 3, 10, 18, 20, 25, 27, and 29). However, So (col. 6, lines 24-29; col. 7, lines 50-56) teaches allowing space between electrode and substrate. The space allows polishing fluid to flow between substrate and electrode. As such, the size of the space affects the volumetric flow rate of polishing fluid, therefore affects the removal rate of the substrate. So also teaches adjusting the electropolishing

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removal rate by changing the electric current density (col. 7, lines 53-56). Furthermore, So (col. 8, lines 45-60) teaches adjusting pressure of polishing pad and revolutions – per-minute (rpm) of the workpiece or pad that change the electrochemical-mechanical polishing rate. Therefore, So clearly shows that electropolishing rate and electrochemical-mechanical polishing rate are result-effective variables. Since same are known to be result effective variables and commonly determined by routine experiment. The process of conducting routine experimentations (optimizations) so as to produce an expected result is obvious to one of ordinary skill in the art. In the absence of showing criticality, it is the examiner's position that a person having ordinary skill in the art at the time of the claimed invention would have found it obvious to modify So by performing routine experiments (by using various processing parameters) to obtain optimal result (such as removing a first portion of the material by electrochemical-mechanical polishing and removing a second portion less than the first portion by direct electropolishing) and adding any of same well-known features to same in order to provide their art recognized advantages and produce an expected result with a reasonable expectation of success.

As to dependent claims 8, 9, and 19, since So teaches rotating the workpiece using various rpm which is adjustable depending on the polishing rate requirement for the specific product (col. 8, lines 57-60). Since it is known to be result effective variable and commonly determined by routine experiment. In the absence of showing criticality or unexpected result, it would have been obvious to one with ordinary skill in the art to

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modify So by performing routine experiments (by using various rpm) to obtain optimal result with a reasonable expectation of success.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kin-Chan Chen whose telephone number is (571) 272-1461. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

December 12, 2005



Kin-Chan Chen
Primary Examiner
Art Unit 1765